

ATSRAC

Lessons Learned

Miami, January 17 - 18, 2001

ATSRAC Lessons Learned

Introduction

The FAA & ATSRAC tasked the OEM's to identify, document and share "lessons learned" by the OEM's and the fleet, which address aspects of design and installation according to the following plan:

1. Situation from each of the significant items from Non-Intrusive aircraft survey.
2. Detailed focus of the noted conditions from aircraft survey, and situation as how to address these conditions.

ATSRAC Lessons Learned

1. Situation from each of the significant items from Non-Intrusive aircraft survey

From the survey of aeroplane wiring installed on representative examples of A300 aeroplanes, five individual items were deemed significant.

None were safety of flight concerns that would require immediate action on any of the inspected aeroplanes.

However, for reasons of repeat occurrences in the same general area, additional engineering analysis was conducted to propose solutions as necessary via either maintenance enhanced inspection guidelines & processes and/or Service Bulletins.

ATSRAC Lessons Learned

1. Situation from each of the significant items from Non-Intrusive aircraft survey (Cont'd).

SI – Item	Action plan on process	References
1. Clamp slippage on rod	<ul style="list-style-type: none"> - Inspection SB is on creation process with compliance Recommended - ESPM 20 Repair section will be revised to provide enhanced technical process for improved gripping of the clamping attachment when found loose 	ISB 24-0094 ESPM 20-53-40 ecd mid-2001
2. Bundle sagging	<ul style="list-style-type: none"> - Enhanced inspection guidelines as per Task 3 report will be introduced in MPD section Introduction. - ESPM 20 Repair section will be revised to provide enhanced technical process for improved gripping of the clamping attachment when found loose 	MPD-Intro ESPM 20-53-40 ecd mid-2001
3. Conduit clamping at conduit end	<ul style="list-style-type: none"> - Enhanced inspection guidelines as per Task 3 report will be introduced in MPD section Introduction. - ESPM 20 Repair section will be revised to provide enhanced technical process for improved gripping of the clamping attachment when found loose - Standard Manual (SM) will be revised for introduction of std parts interchangeability. 	MPD-Intro ESPM 20-53-40 SM ecd mid-2001
4. Bundle at panel 811VU	<ul style="list-style-type: none"> - Upon Design Modification approval (on process), a Mod SB will be launched with compliance Recommended, to introduce additional bundle protection and attachment. - Illustrated Parts Catalog (IPC) will reflect the latest installation configuration as per MOD/SB embodiment & reporting process for IPC revision. 	MSB 24-xxxx ecd mid-2001 (IPC 31-16-12)
5. Bracket unstuck at panel 800VU	<ul style="list-style-type: none"> - Upon Design Modification approval (on process), a Mod SB will be launched with compliance Recommended, to introduce riveted brackets. - Illustrated Parts Catalog (IPC) will reflect the latest installation configuration as per MOD/SB embodiment & reporting process for IPC revision. 	MSB 24-xxxx ecd mid-2001 (IPC 31-16-11)

ATSRAC Lessons Learned

2. Detailed focus of the noted conditions from aircraft survey, and situation as how to address these conditions

From the aircraft surveys (both Non-Intrusive and Intrusive), the following conditions have been found as the most predominant:

- Fluid or chemical contamination
- Inadequate wire repair (unapproved parts)
- Significant dust/lint build-up & Debris accumulation
- Wire/bundle excessive tension
- Wire Clamp condition, sizing, spacing /bundle slacking or sagging

ATSRAC Lessons Learned

2. Detailed focus of the noted conditions from aircraft survey, and situation as how to address these conditions (Cont'd)

Most predominant conditions (cont'd):

- Bundle segregation
- Inadequate clearance to structure
- Incorrect hardware build-up (at terminal block)
- Condition and security of ground point
- Damaged backshell

Evaluation and recommendation, as well as (Airbus) document references pertaining to each of the above conditions are provided in a separate appendix to this presentation.

— ATSRAC Lessons Learned

Conclusion

From ATSRAC initiatives, lessons have been drawn from aircraft inspections.

Actions to develop improvements have been launched.

Progressive implementation is scheduled in the course of 2001.

All the aircraft operators will be informed of these results through an Operator Information Telex (ECD 1st quarter 2001).

— ATSRAC Lessons Learned

- APPENDIX -

**Detailed focus of the noted conditions
from aircraft survey**

ATSRAC Lessons Learned

Conditions	Evaluation	and	Recommendations	Document Ref
Inadequate clearance to structure	Originated from incorrect orientation of clamps, missing or broken or unsecured clamps/ties, bundle slacking, sagging, wire bundle displacement, combined with maintenance traffic, vibrations, sometimes modification (e.g. cabin layout, conversion),		Lay-out of bundle, routing along structure, piping, bundle slack or sag limit criteria, bend radius, attachment, drip loops, routes categories, segregation rules are available in ESPM.	ESPM 20-60-00
Incorrect hardware build-up (at terminal block stud)	Deterioration/deformation of terminal lug contact surfaces can result in electrical contact resistance, and overheating of the connections. Deformations at the lug-to-crimp barrel area can initiate cracks, and possibly lug rupture with vibrations. This can possibly result into intermittent arcing. The use of incorrect screw, washer, nuts can create corrosion due to dissymmetric materials as well as incorrect selection of terminal lug. Wrong orientation of the terminal lugs can create condition for inadequate clearance to adjacent wires and/or environment. If the connection is over-tightened or somewhat loose (i.e. not in compliance with specified tightening/torque values), this can create an additional condition to initiate degradation.		Much information pertaining to terminal lug selection, assembly, stacking processes is available in ESPM. Torque values are provided in both ESPM and AMM.	ESPM 20-48-11 20-48-12 20-48-13 20-48-18 20-44-52 AMM 20-21-xx
Condition and security of ground point	Similar to the discussion concerning incorrect hardware build-up. Additional consideration is to be provided to the coating or varnish protection to be applied or re-applied on the ground connection hardware to avoid corrosion.		Electrical bonding types, description, operation, protection and testing are documented in ESPM	ESPM 20-28-20 to 20-28-50